

AMENDMENT

In the claims:

31. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:

receiving during initialization at the second network device a registration message from the first network device containing parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred session-based service between at least one service device associated with the first network device and a service server associated with the second network device, wherein each of the at least one deferred-session-based service comprises a service for which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices;

configuring the second network device and the service server for the at least one deferred-session-based service;

associating a deferred-inactive-service identifier with the at least one deferred-session-based service, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

sending the deferred-inactive-service identifier to the first network device, wherein when the at least one deferred-session-based service is later activated, a communication link utilizing the parameters is established between the first and second network devices.

32. (Previously presented) The method of claim 31, further comprising the steps of:

5 receiving at the second network device from the first network device the deferred-inactive-service identifier;

responsive to the deferred-inactive-service identifier, activating the at least one deferred-session-based service between the session server and the service device; and

changing the deferred-inactive-service identifier to a deferred-active-service identifier.

10 33. (Previously presented) The method of claim 32, further comprising the steps of:

receiving at the second network device from the first network device the deferred-active-service identifier;

responsive to the deferred-active-service identifier, deactivating the at least one deferred-session-based service between the session server and the service device; and

15 changing the deferred-active-service identifier to a deferred-inactive-service identifier.

34. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:

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sending during initialization from the first network device to the second network device a registration message containing parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred session-

based service between at least one service device associated with the first network device and a service server associated with the second device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices, and wherein a deferred-inactive-service identifier is associated with the at least one deferred-session-based service, and wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

receiving at the first network device from the second network device the deferred-inactive-service identifier, wherein when the at least one deferred session-based service is later activated, a communication link utilizing the parameters is established between the first and second network devices.

35. (Previously presented) The method of claim 34, further comprising the steps of:

sending to the second network device from the first network device the deferred-inactive-service identifier; wherein in response to the deferred-inactive-service identifier, the at least one deferred-session-based service between the service server and the service device is activated; and wherein the deferred-inactive-service identifier is changed to a deferred-active-service identifier.

36. (Previously presented) The method of claim 35, further comprising the steps of:

sending to the second network device from the first network device the deferred-active-service identifier; wherein responsive to the deferred-active-service identifier, the at

least one deferred-session-based service between the service server and the service device is deactivated; and wherein the deferred-active-service identifier is changed to a deferred-inactive-service identifier.

37. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:

the second network device receiving a first message from the first network device, wherein the first message includes parameters associated with a plurality of capabilities of the first network device used for carrying out at least one deferred-session-based service between a service server associated with the second network device and a service device associated with the first network device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices;

extracting the parameters from the first message;

creating a service-session profile for the at least one deferred-session-based service, wherein the service-session profile includes one or more of the parameters;

using the service-session profile to configure the service server and the second network device for the at least one deferred-session-based service for activation at a later time;

associating the service-session profile with a deferred-inactive-service identifier, wherein the deferred-inactive-service identifier is used to activate the at least one deferred-session-based service at the later time; and

sending the deferred-inactive-service identifier to the first network device in a second message, wherein when the deferred-inactive-service identifier is used to later activate the at least one deferred-session-based service, a communication link utilizing the service session profile is established between the first and second network devices.

38. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 37.

39. (Previously presented) The method of claim 37, wherein the first network device is a cable modem and the second network device is a cable modem termination system.

40. (Previously presented) The method of claim 37, wherein the deferred inactive service identifier is a Medium Access Control Protocol service identifier.

41. (Previously presented) The method of claim 37, wherein the parameters include any of quality-of-service, class-of-service, type-of-service or voice service parameters.

42. (Previously presented) The method of claim 37, wherein the first message is a registration message and the second message is a registration response message.

43. (Previously presented) The method of claim 37, wherein the deferred-inactive-service identifier is encoded in a Type-Length-Value format.

44. (Previously presented) The method of claim 37, further comprising the steps of:

the second network device receiving from the first network device a service request to activate the at least one deferred-session-based service, wherein the service request includes the deferred-inactive-service identifier;

5 responsive to the deferred-inactive-service identifier, activating the at least one deferred-session-based service between the service server and the service device; and
changing the deferred-inactive-service identifier to a deferred-active-service identifier.

45. (Previously presented) The method of claim 37, further comprising the step of generating a service event on the service server to request activation of the at least one deferred-session-based service, wherein the step of generating a service event occurs prior to activation of
10 the at least one deferred-session-based service.

46. (Previously presented) The method of claim 44, wherein the service server is any of a Remote Authentication Dial In User Server, a Voice over Internet Protocol server, Asynchronous Transport Mode Server, Frame Relay Server, or an Integrated Services Digital
15 Network server, or an Asymmetric Digital Subscriber Line server.

47. (Previously presented) The method of claim 45, wherein the step of generating a service event includes generating any of an authentication, authorization or an accounting event.

48. (Previously presented) The method of claim 37, further comprising the steps of:

20 the second network device receiving from the first network device a service request to deactivate at least one deferred-session-based service, wherein the service request includes the deferred-active-service identifier;

generating a service event on the service server to request deactivation of the desired service;

deactivating the at least one deferred-session-based service; and

changing the deferred-active-service identifier to a deferred-inactive-service identifier.

- 5 49. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, and wherein a session is established between the first and second devices, a method for providing dynamic services comprising the steps of:
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the second network device receiving from the first network device a service request to activate at least one deferred-session-based service between a service server associated with the second network device and a service device associated with the first network device, wherein the service request includes a deferred-inactive-service identifier that is registered with the second network device during initialization and associated with the at least one deferred-session-based service, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices;

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responsive to the deferred-inactive-service identifier, generating a service event on the service server to request activation of the at least one deferred-session-based service;

activating the at least one deferred-session-based service using a previously created service-session profile associated with the deferred-inactive-service identifier; and

changing the deferred-inactive-service identifier to a deferred-active-service identifier, wherein when the at least one deferred-session-based service is activated, a communication link utilizing the service session profile is established between the first and second network devices.

50. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 53.

51. (Previously presented) The method of claim 49, wherein the first network device is a cable modem and the second network device is a cable modem termination system.

52. (Previously presented) The method of claim 49, wherein the deferred-inactive-service identifier is a Medium Access Control Protocol service identifier and the deferred-active-service identifier is a Medium Access Control Protocol Service identifier.

53. (Previously presented) The method of claim 49, wherein the step of generating a service event includes generating any of an authentication, authorization or an accounting event.

54. (Previously presented) The method of claim 49, wherein the service server is any of a Remote Authentication Dial In User Server, a Voice over Internet Protocol server, Asynchronous Transport Mode Server, Frame Relay Server, an Integrated Services Digital Network server, or an Asymmetric Digital Subscriber Line server.

55. (Previously presented) The method of claim 49, wherein the service request is a Voice over Internet Protocol off-hook request.

56. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, and wherein a session is established between the first and second devices, a method for providing dynamic services comprising the steps of :

a second network device receiving from a first network device a service request to deactivate at least one deferred-session-based service occurring between a service server associated with the second network device and a service device associated with the first network device, wherein the service request includes a deferred-active-service identifier, wherein the deferred-active-service identifier is a complement of a deferred-inactive-service identifier that is registered during initialization with the second network device and associated with the at least one deferred-session-based service, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service was later activated, and activation of the at least one deferred-session-based service occurred after a session was established between the first and second devices;

responsive to the deferred-active-service identifier, generating an event on the service server to request deactivation of the at least one deferred-session-based service,

deactivating the at least one deferred-session-based service; and

changing the deferred-active service identifier to the deferred-inactive-service identifier, wherein when the at least one deferred-session-based service is deactivated, a

communication link utilizing a previously created service session profile is terminated between the first and second network devices.

57. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 56.

5 58. (Previously presented) The method of claim 56, wherein the deferred-active-service identifier is a Medium Access Control Protocol service identifier and the deferred-inactive-service identifier is a Medium Access Control Protocol service identifier.

59. (Previously presented) The method of claim 56, wherein the service request is a Voice over Internet Protocol on-hook request.

10 60. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, a method for providing dynamic services comprising the steps of:

15 the first network device sending to the second network device a service request to activate at least one deferred-session-based service between a service server associated with the second network device and a service device associated with the first network device, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second
20 network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the first and second devices, and wherein the service request

includes a deferred-inactive-service identifier that is registered with the second network device during initialization and associated with at least one deferred-session-based service; and

the first network device receiving from the second network device a service notification from the service server indicating that the at least one deferred-session-based service has been activated, wherein when the at least one deferred-session-based service is activated, a communication link is established between the first and second network devices, and wherein the communication link utilizes parameters associated with the plurality of capabilities of the first network device used for carrying out the at least one deferred-session-based service.

61. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the methods of claim 60.

62. (Previously presented) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes first and second network devices, wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, and wherein a session is established between the first and second devices, a method for providing dynamic services comprising the steps of:

a first network device sending a service request to a second network device to deactivate at least one deferred-session-based service occurring between a service server associated with the second network device and a service device associated with the first network device, wherein the service request includes a deferred-active-service identifier, wherein the deferred-active-service identifier is a complement of a deferred-inactive-service

identifier that is registered during initialization with the second network device and associated with the at least one deferred-session-based service, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service was later activated, and activation of the at least one deferred-session-based service occurred after a session was established between the first and second devices; and

the first network device receiving a service notification from the service server indicating that the at least one deferred-session-based service has been deactivated, wherein when the at least one deferred-session-based service is deactivated, a communication link between the first and second network devices is terminated, and wherein the communication link utilized parameters associated with the plurality of capabilities of the first network device used for carrying out the at least one deferred-session-based service.

63. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 62.

64. (Previously presented) A system for providing dynamic services to a network device in data communication system, wherein the system includes first and second network devices, and wherein during initialization, communication system resources for carrying out session-based services are registered with and allocated by the second network device, the system comprising in combination:

the second network device providing at least one deferred-session-based service between a service device associated with the first network device and a service server associated with the second network device, wherein each of the at least one deferred-

session-based service comprises a service in which communication system resources are registered with, but not allocated by the second network device until the at least one deferred session-based service is later activated, and activation of the at least one deferred session-based service is operable to occur after a session is established between the first and second devices;

a service-session profile including parameters associated with a plurality of capabilities of the first network device used for carrying out the at least one deferred-session-based service, wherein the service-session profile is used for configuring the second network device and the service server for the at least one deferred-session-based service, and wherein when the at least one deferred-session-based service is later activated, a communication link utilizing the service session profile is established between the first and second network devices;

a deferred-inactive-service identifier associated with the service-session profile for later activating a previously-configured at least one deferred-session-based service;

a deferred-active-service identifier created from the deferred-inactive-service identifier for indicating that the at least one deferred-session-based service is active; and

a service event generator for generating a service event on the service server to request activation of the at least one deferred-session-based service.

65. (Currently amended) In a data communication system including a plurality of network devices, wherein the plurality of network devices includes ~~first and second network devices a cable modem termination system and a cable modem~~, and wherein during initialization, communication system resources for carrying out session-based services are registered with

and allocated by the second network device, a method for providing dynamic services comprising the steps of:

a ~~the~~ cable modem termination system receiving from a ~~the~~ cable modem during initialization a registration message, wherein the registration message includes parameters associated with a plurality of capabilities of the cable used for carrying out at least one deferred-session-based service between a service server associated with the cable modem termination system and a service device associated with the cable modem, wherein each of the at least one deferred-session-based service comprises a service in which communication system resources are registered with, but not allocated by the cable modem termination system until the at least one deferred session-based service is later activated, and activation of the at least one deferred-session-based service is operable to occur after a session is established between the cable modem and cable modem termination system;

extracting the parameters from the registration message;

creating a service-session profile for the at least one deferred-session-based service, wherein the service-session profile includes one or more of the parameters;

using the service-session profile to configure the cable modem termination system and the service server for the at least one deferred-session-based service;

associating the service-session profile with one or more deferred-inactive-medium-access-control-protocol-service identifiers, wherein the one or more deferred-inactive-medium-access-control-protocol-service identifiers are used by the service device to activate the at least one deferred-session-based service, and wherein the one or more deferred-inactive-medium-access-control-protocol-service identifiers are used by the service servers to generate events for requesting activation of the at least one deferred-session-based service; and

sending the one or more deferred-inactive-medium-access-control-protocol-service identifiers to the cable modem in a registration response message, wherein when the at least one deferred-session-based service is later activated, a communication link utilizing the service-session profile is established between the cable modem and the cable modem termination system.

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66. (Previously presented) A computer readable medium having stored therein instructions for causing a central processing unit to execute the method of claim 65.